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Building Newsletter 23-6

Allowable Shear for Wood Stud Walls with Wood Structural Panels on Both Sides

Section 2302.1 of the Uniform Building Code defines a Wood Structural Panel as a structural panel product composed primarily of wood and meeting the requirements of UBC Standards 23-2 or 23-3. Wood structural panels include all veneer plywood, composite panels containing a combination of veneer and wood based material, and matformed panels such as oriented strand board and waferboard.

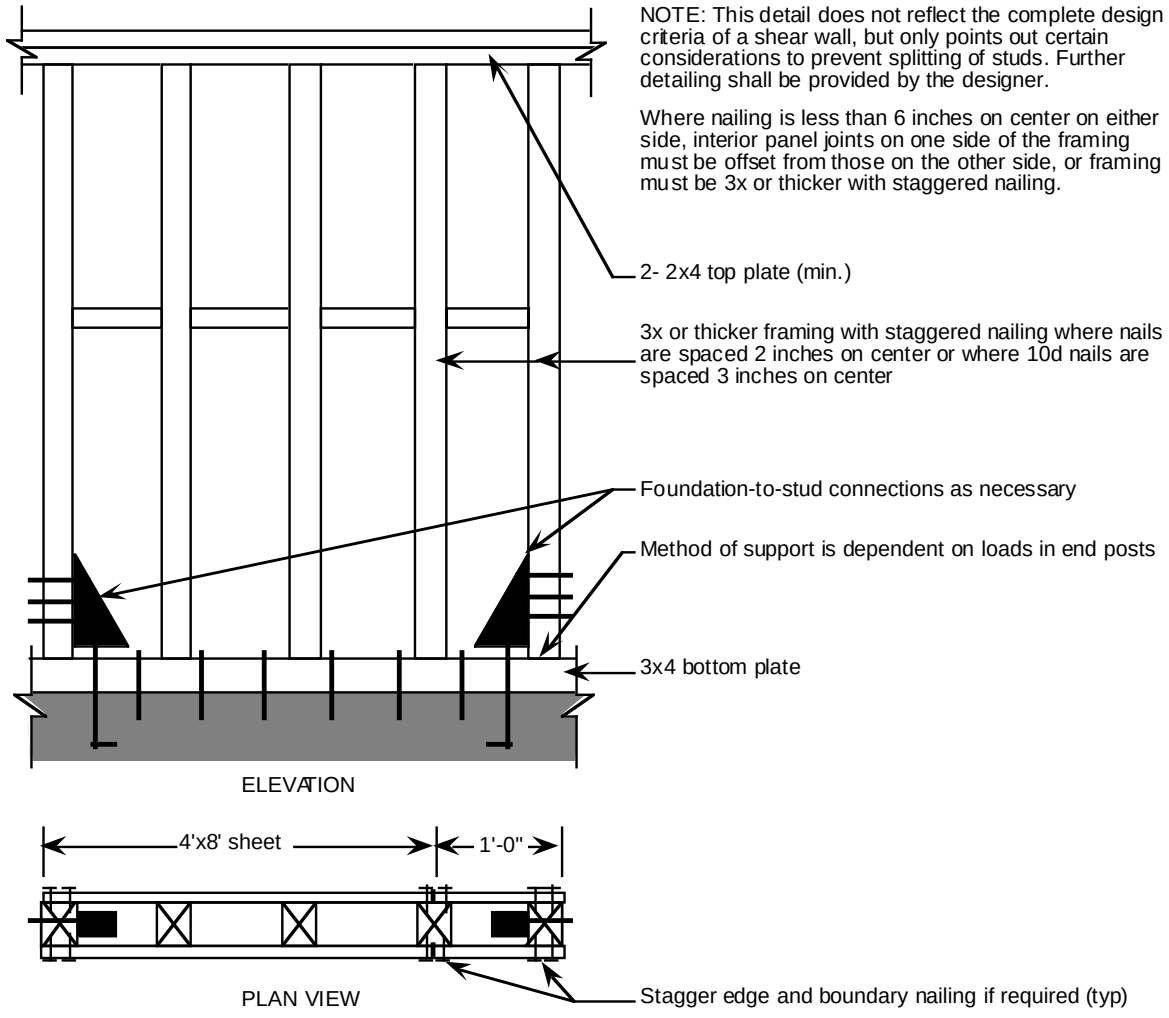
Table No. 23-I-K-1 of the Uniform Building Code specifies allowable shear values for wood structural panel shear walls with panels applied to one side of the wall. When wood structural panels are applied to both sides of a wall, the allowable shear for the wall may be taken as twice the tabulated value for one side, except that where the shear capacities are not equal, the allowable shear shall be either the shear for the side with the higher capacity or twice the shear for the side with the lower capacity, whichever is greater.

When wood structural panels are applied to both sides of a wall, the following requirements shall be satisfied:

I. Total Shear Values Up to 900 Pounds/Lineal Foot

An acceptable detail for double shear panels with total shear values up to 900 pounds per lineal foot is illustrated in Figure 1.

Figure 1/Five-foot-wide double shear panel (shear values up to 900 pounds per lineal foot)



A. The wood structural panel shall be placed on 3x or thicker framing and nails shall be staggered where nails are spaced 2 inches on center or where 10d nails having penetration into framing of more than $1^5/_8$ inches are spaced 3 inches on center, except that 2x nominal double plates may be used with staggered panel nailing.

B. Where nailing is less than 6 inches on center on either side, both vertical and horizontal interior panel joints shall be offset to fall on different framing members or framing shall be 3x or thicker and nails on each side shall be staggered.

C. The special detailing requirements specified above shall be shown on the plans in addition to other typical shear panel detailing such as holdown anchors and drag connections. No penetrations or notches shall be permitted other than those shown on the plans.

D. The wood structural panel on one side of the shear wall must be nailed completely before the frame inspection. The panel on the other side must be installed and inspected prior to installation of wall surface covering.

II. Total Shear Values Greater Than 900 Pounds/Lineal Foot

An acceptable detail for double shear panels with total shear values greater than 900 pounds per lineal foot is illustrated in Figure 2.

A. The panel shall be placed on 3x6 or larger intermediate studs, blocking and plates, except that vertical members at panel boundaries and members where interior joint edge nailing occurs shall be not less than 4x6.

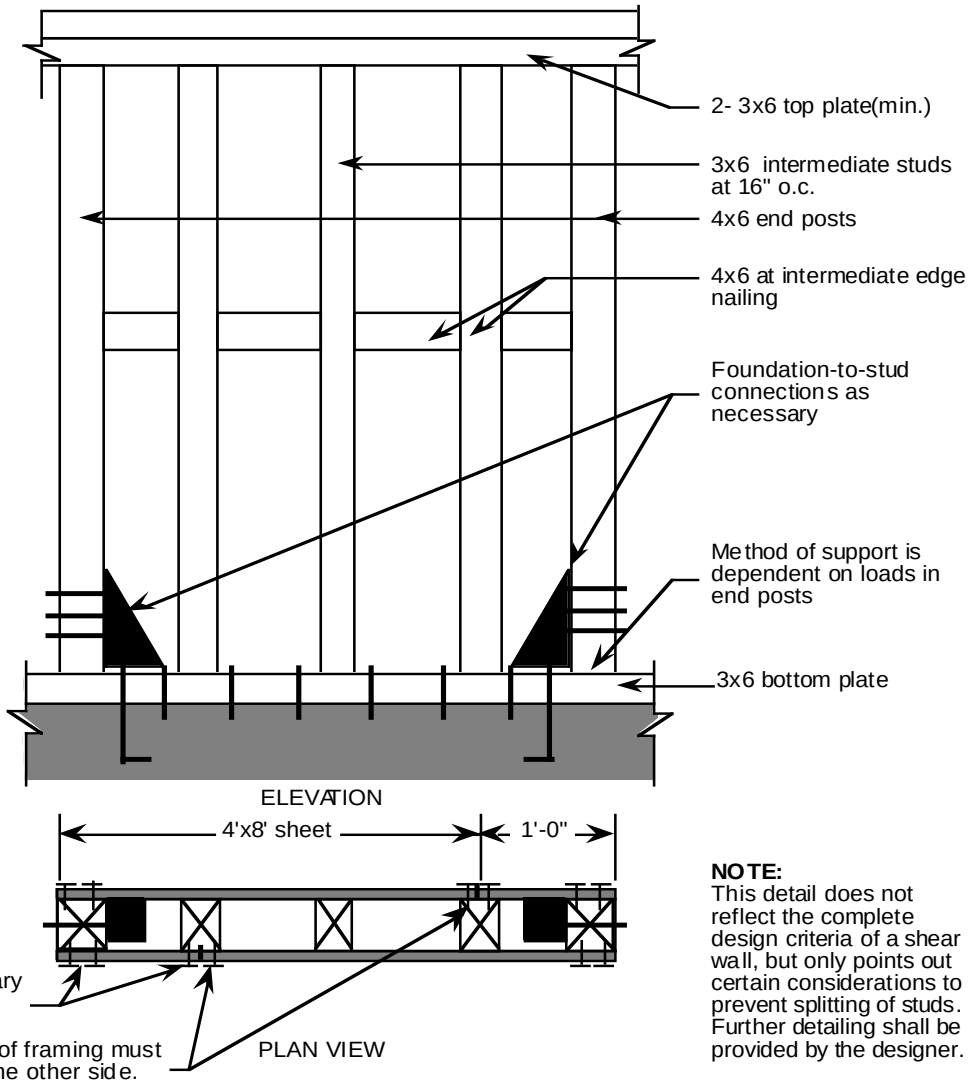
B. Both vertical and horizontal interior joints on opposite sides of the wall shall be staggered.

C. The height-to-width ratio shall be limited to 2:1.

D. The walls shall be designed by a licensed engineer or architect. The special detailing requirements specified above shall be shown on the plans in addition to other typical shear panel detailing such as holdown anchors and drag connections. No penetrations or notches shall be permitted other than those shown on the plans.

E. The wood structural panel on one side of the shear wall must be nailed before the frame inspection. The panel on the other side must be installed and inspected prior to installation of wall surface covering.

Figure 2/Five-foot-wide double shear panel
(shear values greater than 900 pounds per lineal foot)



NOTE:
This detail does not reflect the complete design criteria of a shear wall, but only points out certain considerations to prevent splitting of studs. Further detailing shall be provided by the designer.